Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL QUALITY MEASURES CLEARINGHOUSE

General

Title

Diabetes mellitus: percentage of patients aged 18 years and older with a diagnosis of diabetes mellitus who were evaluated for proper footwear and sizing at least once within 12 months.

Source(s)

American Podiatric Medical Association (APMA). Diabetic foot and ankle care physician performance measurement set. Bethesda (MD): American Podiatric Medical Association; 2014 Aug. 13 p.

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the percentage of patients aged 18 years and older with a diagnosis of diabetes mellitus who were evaluated for proper footwear and sizing at least once within 12 months.

Rationale

Foot ulceration is the most common single precursor to lower extremity amputations among persons with diabetes. Shoe trauma, in concert with loss of protective sensation and concomitant foot deformity, is the leading event precipitating foot ulceration in persons with diabetes. Treatment of infected foot wounds accounts for up to one-quarter of all inpatient hospital admissions for people with diabetes in the United States. Peripheral sensory neuropathy in the absence of perceived trauma is the primary factor leading to diabetic foot ulcerations. Approximately 45% to 60% of all diabetic ulcerations are purely neuropathic. In people with diabetes, 22.8% have foot problems -- such as amputations and numbness -- compared with 10% of nondiabetics. Over the age of 40 years old, 30% of people with diabetes have loss of sensation in

their feet.

Clinical Recommendation Statements:

The multifactorial etiology of diabetic foot ulcers is evidenced by the numerous pathophysiologic pathways that can potentially lead to this disorder. Among these are two common mechanisms by which foot deformity and neuropathy may induce skin breakdown in persons with diabetes. The first mechanism of injury refers to prolonged low pressure over a bony prominence (i.e., bunion or hammertoe deformity). This generally causes wounds over the medial, lateral, and dorsal aspects of the forefoot and is associated with tight or ill-fitting shoes (American College of Foot and Ankle Surgeons/American College of Foot and Ankle Orthopedics and Medicine [ACFAS/ACFAOM] Clinical Practice Guidelines).

Evidence for Rationale

American Podiatric Medical Association (APMA). Diabetic foot and ankle care physician performance measurement set. Bethesda (MD): American Podiatric Medical Association; 2014 Aug. 13 p.

Primary Health Components

Diabetes mellitus; foot ulceration prevention; evaluation of proper footwear

Denominator Description

All patients aged 18 years and older with a diagnosis of diabetes mellitus (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Patients who were evaluated for proper footwear and sizing at least once within 12 months (see the related "Numerator Inclusions/Exclusions" field)

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

- Fifteen per cent of patients with diabetes will develop a foot ulcer at some point in their life. Ill-fitting footwear frequently contributes to foot ulceration. A good fitting shoe is an essential component in the management of the diabetic foot. The objective of this study was to assess the feet and footwear of patients with diabetes to determine whether they are wearing the correct-sized shoes. *Methods*: One-hundred patients with diabetes who were attending the general diabetic clinic had their foot length measured using a 'Clarks' shoe shop device and foot width using a pair of callipers. Measurements were taken whilst seated and standing. Shoe dimensions were also assessed by recording the manufactured shoe length and using callipers to assess shoe width. A

calibrated measuring stick standardised shoe lengths. Neurovascular status and the presence of deformities in the foot were also recorded. *Results*: One-third of diabetic patients were wearing the correct shoes on either foot whilst seated or whilst standing. However, only 24% of patients were wearing shoes that were of the correct length and width for both feet whilst seated and 20% upon standing. Seventeen percent of patients appeared in both groups. No significance was found between any other variables, such as sensory neuropathy. *Conclusions*: Many patients with diabetes wear shoes that do not fit, particularly, shoes that are too narrow for their foot width. Assessing the appropriateness of footwear maybe an important part of foot examination (Harrison et al., 2007).

- Poorly fitting footwear has frequently been cited as an etiologic factor in the pathway to diabetic foot ulceration. However, the researchers are unaware of any reports in the medical literature specifically measuring shoe size versus foot size in this high-risk population. Researchers assessed the prevalence of poorly fitting footwear in individuals with and without diabetic foot ulceration. They evaluated the shoe size of 440 consecutive patients (94.1% male; mean +/- standard deviation [SD] age, 67.2 +/- 12.5 years) presenting to an interdisciplinary teaching clinic. Of this population, 58.4% were diagnosed as having diabetes, and 6.8% had active diabetic foot ulceration. Only 25.5% of the patients were wearing appropriately sized shoes. Individuals with diabetic foot ulceration were 5.1 times more likely to have poorly fitting shoes than those without a wound (93.3% versus 73.2%; odds ratio [OR], 5.1; 95% confidence interval [CI], 1.2-21.9; P = .02). This association was also evident when assessing only the 32.3% of the total population with diabetes and loss of protective sensation (93.3% versus 75.0%; OR, 4.8; 95% CI, 1.1-20.9; P = .04). Poorly fitting shoes seem to be more prevalent in people with diabetic foot wounds than in those without wounds with or without peripheral neuropathy. This implies that appropriate meticulous screening for shoe-foot mismatches may be useful in reducing the risk of lower-extremity ulceration (Nixon et al., 2006).

Evidence for Additional Information Supporting Need for the Measure

American Podiatric Medical Association (APMA). Diabetic foot and ankle care physician performance measurement set. Bethesda (MD): American Podiatric Medical Association; 2014 Aug. 13 p.

Harrison SJ, Cochrane L, Abboud RJ, Leese GP. Do patients with diabetes wear shoes of the correct size?. Int J Clin Pract. 2007 Nov;61(11):1900-4. PubMed

Nixon BP, Armstrong DG, Wendell C, Vazquez JR, Rabinovich Z, Kimbriel HR, Rosales MA, Boulton AJ. Do US veterans wear appropriately sized shoes?: the Veterans Affairs shoe size selection study. J Am Podiatr Med Assoc. 2006 Jul-Aug;96(4):290-2. PubMed

Extent of Measure Testing

Measures Tested

Measures from the Diabetes Mellitus: Foot and Ankle Care measure set tested in the American Podiatric Medical Association (APMA) Testing project:

Ulcer Prevention - Evaluation of Footwear
Peripheral Neuropathy - Neurological Evaluation

Methods

Three physician office sites participated in this measure testing project. Originally, four sites were identified and selected by Dr. James R. Christina, Director of Scientific Affairs for the APMA. One site withdrew due to time constraints resulting from a change in practice ownership.

All three physician office sites participating in this measure testing project represented urban settings on the East Coast. The practices each had two or more physicians, with physicians actively involved with

APMA.

Two trained data abstractors performed on-site chart reviews the weeks of October 1 and November 5, 2012. Testing was performed on paper medical records at one physician office site and in the electronic health record (EHR) environment for two physician office sites. The case samples for chart reviews were randomly selected from eligible patients seen at two of the test sites between January 1 and December 31, 2011. Due to a change in the billing system, one test site requested a change in the chart sample timeframe to October 1, 2011 through May 1, 2012 to allow for accurate identification of eligible patients.

Testing Performed and Results

Feasibility: Test site personnel completed a data collection questionnaire to provide information about the presence and location of each data element comprising the two measures within the medical record to assess the feasibility of data capture, calculation and reporting of the performance measures in a timely manner and at reasonable cost.

Results: This test revealed that it was feasible to implement these performance measures at the test sites with some EHR modifications.

Validation Against the Gold Standard Reliability

Parallel-forms reliability testing was performed by comparing manual abstraction of the data elements necessary to construct the measure from the medical records with Physician Quality Reporting System (PQRS) claims submission. Agreement was calculated between the two methods at the level of the numerator, denominator and exception (if applicable).

To validate inclusion in the numerator, the practice sites provided various identification methods. Two practices provided a report of the sampled list of patients per encounter with the PQRS codes submitted. The third site provided instructions on viewing the billing codes per dates or invoice within each patient's medical record.

Agreement rates were calculated and reported with kappa statistics with 95% confidence intervals to recognize any agreement that could be attributable to chance alone.

Results: The measures were found to be highly reliable with agreement rates ranging from 93 to 100%.

Refer to the APMA *2012 Measure Testing Project: Diabetic Foot & Ankle Care* for additional testing details.

Evidence for Extent of Measure Testing

American Podiatric Medical Association (APMA). 2012 measure testing project: diabetic foot & ankle care. Des Moines (IA): Telligen; 2012. 36 p.

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Ambulatory/Office-based Care

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Individual Clinicians or Public Health Professionals

Statement of Acceptable Minimum Sample Size

Unspecified

Target Population Age

Age greater than or equal to 18 years

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Living with Illness

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding Period

The reporting period

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Clinical Condition

Encounter

Patient/Individual (Consumer) Characteristic

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions

All patients aged 18 years and older with a diagnosis of diabetes mellitus

Note: International Classification of Diseases, Ninth Revision (ICD-9) diagnosis codes, Current Procedural Terminology Evaluation and Management (CPT E/M) service codes, CPT procedure codes, and patient demographics (age, gender, etc.) are used to identify patients who are included in the measure's denominator. An ICD-9 diagnosis code to identify patients with a diagnosis of diabetes mellitus and a CPT E/M service code or a CPT procedure code are required for denominator inclusion. Refer to the original measure documentation for coding details.

Exclusions

Clinician documented that patient was not an eligible candidate for footwear evaluation measure.

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions

Patients who were evaluated for proper footwear and sizing at least once within 12 months

Note:

> Evaluation for proper footwear includes a foot examination documenting the vascular, neurological, dermatological and structural/biomechanical findings. The foot should be measured using a standard measuring device and counseling on appropriate footwear should be based on risk categorization.
> G-codes are used to report the numerator of the measure. Refer to the original measure documentation for coding details.

Exclusions
Unspecified

Numerator Search Strategy

Fixed time period or point in time

Data Source

Administrative clinical data

Electronic health/medical record

Paper medical record

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

Unspecified

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a higher score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Identifying Information

Original Title

Measure #POD 3: diabetic foot & ankle care, ulcer prevention - evaluation of footwear.

Measure Collection Name

Diabetic Foot and Ankle Care Physician Performance Measurement Set

Submitter

American Podiatric Medical Association - Medical Specialty Society

Developer

American Podiatric Medical Association - Medical Specialty Society

Funding Source(s)

American Podiatric Medical Association

Composition of the Group that Developed the Measure

Podiatry Work Group: Vickie R. Driver, DPM (*Co-chair*); Matthew G. Garoufalis, DPM (*Co-chair*); A. Anthony Haro, III, DPM; Jengyu Lai, DPM; Stephen M. Pribut, DPM; Victor J. Quijano, Jr., DPM; John Steven Steinberg, DPM; James S. Wrobel, DPM, MS; R. Daniel Davis, DPM; Craig Gastwirth, DPM; David G. Armstrong, DPM, PhD

American Podiatric Medical Association: James R. Christina, DPM

American College of Foot and Ankle Surgeons: Robert G. Frykberg, DPM, MPH; Thomas Zygonis, DPM

American College of Foot and Ankle Orthopedics and Medicine: James Stavosky, DPM; Rodney Stuck, DPM

Centers for Medicare and Medicaid Services: Latousha D. Leslie, RN BSN, MS

Financial Disclosures/Other Potential Conflicts of Interest

There were no potential conflicts of interest to report in the development of these measures.

Endorser

National Quality Forum - None

NQF Number

not defined yet

Date of Endorsement

2014 Dec 30

Measure Initiative(s)

Physician Quality Reporting System

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2014 Aug

Measure Maintenance

Unspecified

Date of Next Anticipated Revision

Unspecified

Measure Status

This is the current release of the measure.

This measure updates a previous version: American Podiatric Medical Association (APMA), American College of Foot and Ankle Surgeons, American College of Foot and Ankle Orthopedics and Medicine, Centers for Medicare and Medicaid Services. Diabetic foot and ankle care physician performance measurement set. Bethesda (MD): American Podiatric Medical Association, Inc.; 2007 Aug. 11 p.

The measure developer reaffirmed the currency of this measure in December 2015.

Measure Availability

Source not available electronically.

For more information, contact the American Podiatric Medical Association (APMA) at 9312 Old Georgetown Road, Bethesda, MD 20814-1621; Phone: 301-581-9200; Web site: www.apma.org .

NQMC Status

This NQMC summary was completed by ECRI Institute on October 3, 2008. The information was verified by the measure developer on November 12, 2008.

This NQMC summary was retrofitted into the new template on June 8, 2011.

This NQMC summary was updated by ECRI Institute on June 3, 2015. The information was verified by the measure developer on July 6, 2015.

The information was reaffirmed by the measure developer on December 17, 2015.

Copyright Statement

Production

Source(s)

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